Some Options for In Situ Geochemical and Geophysical Experiments in the Titan Environment by TandEM/TSSM

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We present concepts for in situ instrumentation for Titan aerial platforms, probes, landers and penetrators, in the context of the TandEM mission proposal in ESA's Cosmic Vision programme and TSSM in NASA's New Frontiers program. These include 1) geochemical instrumentation for aerosol analysis, GCMS of surface materials, stable isotope analysis and trace gas detection, and 2) geophysical / meteorological instrumentation for studies of atmospheric science and energy balance. These concepts draw upon heritage and lessons learned from the Huygens Surface Science Package and Atmospheric Structure Instrument, the Beagle 2 Gas Analysis Package and the Ptolemy evolved gas analyser on the Philae comet lander.

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